March 6, 2012

Mr. Dominique Grandemange, Site Manager
AREVA NP, Inc.
2101 Horn Rapids Road
Richland, WA 99352-5102

SUBJECT: INSPECTION REPORT NO. 70-1257/2012-201

Dear Mr. Grandemange:

The U.S. Nuclear Regulatory Commission (NRC) conducted a routine announced criticality safety inspection at your Richland, Washington, facility from February 6-9, 2012. The purpose of the inspection was to determine whether activities involving licensed materials were conducted safely and in accordance with NRC requirements. An exit meeting was held on February 9, 2012, during which inspection observations and findings were discussed with your staff.

The inspection, which is described in the enclosure, focused on the most hazardous activities and plant conditions; the most important controls relied on for safety and their analytical basis; and the principal management measures for ensuring controls are available and reliable to perform their functions relied on for safety. The inspection consisted of analytical basis review, selective review of related procedures and records, examinations of relevant nuclear criticality safety (NCS)-related equipment, interviews with NCS engineers and plant personnel, and facility walkdowns to observe plant conditions and activities related to safety basis assumptions and related NCS controls. Throughout this inspection, observations were discussed with your managers and staff.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390 of NRC's "Rules of Practice," a copy of this letter and the enclosure will be available in the public electronic reading room of the NRC's Agency-Wide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning this report, please contact Thomas Marenchin at 301-492-3209, or via e-mail to Thomas.Marenchin@nrc.gov.

Sincerely,

/RA/

Thomas G. Hiltz, Chief
Technical Support Branch
Division of Fuel Cycle Safety
and Safeguards,
Office of Nuclear Material Safety
and Safeguards

Docket No. 70-1257
License No. SNM-1227

Enclosure:
Inspection Report 70-1257/2012-201

cc: L. J. Maas, AREVA NP
C. D. Manning, AREVA NP
R. E. Link, AREVA NP

cc w/o enclosures: Mr. Gary Robertson,
Washington Department of Health

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U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

Docket No.:	70-1257
License No.:	SNM-1227
Report No.:	70-1257/2012-201
Licensee:	AREVA NP, Inc.
Location:	Richland, Washington
Inspection Dates:	February 6-9, 2012
Inspectors:	Thomas Marenchin, Criticality Safety Inspector Timothy Sippel, Criticality Safety Inspector
Approved by:	Thomas G. Hiltz, Chief Technical Support Branch Division of Fuel Cycle Safety and Safeguards, Office of Nuclear Material Safety and Safeguards

Enclosure

EXECUTIVE SUMMARY

AREVA Nuclear Power, Inc.
U.S. Nuclear Regulatory Commission
Inspection Report No. 70-1257/2012-201

Introduction

Staff of the U.S. Nuclear Regulatory Commission performed a routine and announced nuclear criticality safety (NCS) inspection of the AREVA Nuclear Power Inc. (AREVA NP) facility in Richland, Washington (WA) from February 6-9, 2012. The inspection included an on-site review of the licensee's NCS program; NCS analyses; plant operations; NCS inspections, audits, and investigations; and open item follow-up. The inspection focused on risk-significant fissile material processing activities in the uranium hexafluoride (UF_6) cylinder receiving pad, the Dry Conversion Facility (DCF), the Line #2 Ammonium diuranate (ADU) conversion area, the Uranium Dioxide (UO_2) Building including scrap recovery processes, the blended low-enriched uranium (BLEU) facility, rod and bundle fabrication shops, the incinerator, Engineering Laboratory Operations (ELO), the BLEU powder storage area, outside powder storage warehouses, the Product Development and Test Facility, the Analytical Services Laboratory, and the wastewater facility.

Results

- No safety concerns were identified regarding the licensee NCS program.
- No safety concerns were noted regarding NCS audits.
- No safety concerns were identified during a review of recent licensee investigation of internal events.
- No safety concerns were noted during walkdowns of plant operations.

REPORT DETAILS

1.0 Plant Status

The licensee manufactures light water reactor fuel at its Richland, WA facility. During the inspection the licensee was conducting routine dry conversion, powder preparation, pelletizing and bundle fabrication operations. The licensee was also performing routine scrap recycle and waste management operations.

2.0 Nuclear Criticality Safety Program (IP 88015 & 88016)

a. Inspection Scope

The inspector reviewed the licensee NCS program and analyses. The inspector verified the adequacy of the program and analyses to assure the safety of fissile material operations. The inspector interviewed licensee managers and engineers in the safety and production departments, operations engineers, and selected operators. The inspector reviewed selected NCS-related items relied on for safety (IROFS) to determine that performance requirements have been met for selected accident sequences. The inspector reviewed selected aspects of the following documents:

- CSA-GEN-4.0, "45 Gallon Drums – Loading, Transport, Storage, Lube Addition, Tumbling," revision 1, dated March 4, 1993
- E04-06-003, "Review of Nuclear Criticality Safety Standards," revision 4
- E04-06-004, "Preparation & Review of Nuclear Criticality Safety Documents," revision 8
- E04-NCSA-090, "Line 2 UO_2 Powder Production," revision 10, dated November 21, 2011
- E04-NCSA-120, "UNH Reprocessing," revision 13, dated December 13, 2011
- E04-NCSA-163, "Industrial Waste Water Treatment Facilities," revision 19, dated November 4, 2011
- E04-NCSA-186, "Supercritical Carbon Dioxide (CO_2) Extraction System," revision 4
- E04-NCSA-360, "Lube Blend Press Feed," revision 10, dated January 16, 2012
- E04-NCSA-600, "Specialty Fuels Powder Preparation," revision 14, dated January 2, 2012
- E04-NCSA-610, "Specialty Fuels Pellet Pressing and Loaded Pellet Boat Transport," revision 1, dated December 17, 2011
- E04-NCSA-960, "HVAC Exhaust System," revision 13, dated December 12, 2011
- E04-NCSS-090, "Line 2 UO_2 Powder Production," revision 10, dated November 21, 2011
- E04-NCSS-120, "UNH Reprocessing," revision 13, dated December 13, 2011
- E04-NCSS-163, "Industrial Wastewater Treatment Facilities," revision 14
- E04-NCSS-610, "Specialty Fuels Pellet Pressing and Loaded Pellet Boat Transport," revision 1, dated December 21, 2011
- E08-03-1.1, "Classifying an Emergency," revision 4, dated December 9, 2010
- E08-03-3.1, "Plant Emergency Director," revision 4, dated January 28, 2010
- E08-03-3.8, "PERT Incident Commander," revision 6, dated March 16, 2011
- E08-03-4.3, "Incident Notification Worksheet – Offsite Agencies," revision 6, dated November 21, 2011
- E08-03-5.1, "After Action Report Form," revision 4, dated October 21, 2010

- E08-03-6.8, “Response to Volcano Eruption,” revision 3, dated October 22, 2010
- E08-03-8.2, “Plant Evacuation Procedures – Offsite,” revision 3.1, dated October 20, 2010
- E08-03-8.3, “Plant Evacuation Procedures – Onsite,” revision 3.1, dated October 15, 2010
- E08-03-8.7, “Emergency Action Guides,” revision 1.1, dated January 28, 2010
- E08-04-2.12, “Richland Fire Department,” revision 2, dated June 14, 2011
- E09-06-009, “Criticality System Alarm and Test procedure,” revision 4, dated May 7, 2010

b. Observations and Findings

The inspectors observed that the licensee had an NCS program which was independent from production and was implemented through written procedures. The inspector also observed that the licensee NCS program reviewed process changes affecting criticality safety. The licensee had made a large number of minor changes to their Nuclear Criticality Safety Analysis (NCSAs) to increase consistency and level of detail. The inspectors reviewed a selection of the NCSAs that had been changed; and verified that the changes were made and reviewed by qualified NCS engineers; and that the analyses provided for sub-criticality of the systems and operations. The inspectors observed that the analyses contained appropriate limits on controlled parameters for each credible accident sequence leading to inadvertent criticality.

c. Conclusions

No safety concerns were identified regarding the licensee NCS program.

3.0 Nuclear Criticality Safety Inspections, Audits, and Investigations (IP 88015)

a. Inspection Scope

The inspector reviewed licensee internal audit procedures, records of previously completed audits of fissile material operations, and records of NCS infractions for 2011 and 2012. The inspector accompanied a licensee auditor on a monthly NCS audit. The inspector reviewed selected aspects of the following documents:

- E04-04-007, “2009 Nuclear Criticality Safety Program Assessment,” revision 1, dated November 20, 2009
- E04-06-002, “Routine Nuclear Criticality Safety Audits,” revision 3,
- E04-07-201112, “NCS Audit/Inspection Report – December 2011,” revision 1
- E04-07-201111, “NCS Audit/Inspection Report – November 2011,” revision 1
- E04-07-201110, “NCS Audit/Inspection Report – October 2011,” revision 1
- E04-07-201109, “NCS Audit/Inspection Report – September 2011,” revision 1
- E04-07-201108, “NCS Audit/Inspection Report – August 2011,” revision 1
- E04-07-201107, “NCS Audit/Inspection Report – July 2011,” revision 1
- E04-07-201106, “NCS Audit/Inspection Report – June 2011,” revision 1

In addition the inspector attended the licensee’s Safety Council meeting on February 8, during which the results of the January 2012, NCS Audit/Inspection were presented.

b. Observations and Findings

The inspector found that NCS audits were conducted according to procedural requirements. The inspector noted that NCS audits were focused on determining that plant operations requirements conform to those listed in the applicable NCS specification (NCSS) documents.

The inspector observed that the documentation of NCS infractions contained in the monthly NCS audit reports included the NCS infractions that had been observed over the audited month. The audit schedule is made such that the monthly audits cover every area in the course of a year. No infractions were found during the audits documented in the reports. NCS infractions from previous months that had corrective actions that were not completed are no longer tracked in the NCS audit report. The licensee tracks their corrective actions for NCS infractions found during audits using WebCAP.

The inspector accompanied a licensee auditor during a routine monthly inspection and observed the conduct of the audit. The auditor was a qualified NCS engineer who was familiar with the systems and processes being audited. The auditor observed the operators while they were performing their work and interviewed them to check their understanding of the systems, procedures, IROFSs, and controls. The auditor compared the answers and explanations given by the operators against the relevant NCSS and other documentation. The auditor also checked the adequacy of control implementation; and reviewed plant operations for compliance with license requirements, procedures, and postings.

c. Conclusions

No safety concerns were noted regarding NCS audits.

4.0 Nuclear Criticality Safety Event Review and Follow-up (IP 88015 & 88016)

a. Inspection Scope

The inspector reviewed the licensee response to internally-reported events. The inspector reviewed the progress of investigations and interviewed licensee staff regarding immediate and long-term corrective actions. The inspector reviewed selected aspects of the following documents:

- Drawing No. CSA-611,613, “Industrial Waste Water System IX Regeneration,” revision 3
- E04-NCSA-163, “Industrial Waste Water Treatment Facilities,” revision 19, dated November 4, 2011
- E04-NCSA-186, “Supercritical Carbon Dioxide (CO_2) Extraction System,” revision 4
- E04-NCSS-163, “Industrial Wastewater Treatment Facilities,” revision 14

b. Observations and Findings

The inspector reviewed selected licensee internally-reported events. The inspector observed that internal events were investigated in accordance with written procedures and appropriate corrective actions were assigned. The inspector had no safety

concerns regarding licensee reporting, investigation, and correction of internal NCS related events.

c. Conclusions

No safety concerns were identified during a review of recent licensee investigation of internal events.

5.0 Plant Activities (IP 88015)

a. Inspection Scope

The inspectors performed plant walkdowns to review activities in progress and to determine whether risk-significant fissile material operations were being conducted safely and in accordance with regulatory requirements. A walkdown was also performed in the supercritical CO_2 extraction process; which is a new process that is being brought online. The inspectors interviewed operators, NCS engineers, and process engineers both before and during walkdowns. Inspectors attended a licensee meeting on February 7, 2012, that discussed current operational and safety issues.

b. Observations and Findings

The inspector performed walkdowns of the UF_6 cylinder receiving pad, the DCF, the Line #2 ADU conversion area, the UO_2 Building including scrap recovery processes, the BLEU facility, rod and bundle fabrication shops, the incinerator, ELO, the supercritical CO2 extraction process, the BLEU powder storage area, outside powder storage warehouses, the Product Development and Test Facility, the Analytical Services Laboratory, and the wastewater facility. The inspector noted that observed operations were performed in accordance with written procedures and verified the effectiveness of IROFS to assure adequate subcritical margin for normal and credible abnormal conditions.

c. Conclusions

No safety concerns were noted during walkdowns of plant operations.

6.0 Exit Meeting

The inspectors communicated the inspection scope and results to members of AREVA on February 9, 2012. Licensee management acknowledged and understood the findings as presented.

SUPPLEMENTARY INFORMATION

1.0 List of Items Opened, Closed, and Discussed

Items Opened

None

Items Closed

None

Items Discussed

None

2.0 Inspection Procedures Used

IP 88015	Nuclear Criticality Safety (NCS) Program
IP 88016	NCS Evaluations and Analyses

3.0 Key Points of Contact

AREVA NP, Inc. - Richland

K. Kulesza	NCS Engineer
R. Link	Manager, Environmental, Health, Safety, and Licensing
L. Maas	Manager, Regulatory Compliance
C. Manning	Manager, NCS
J. Payne	Maintenance
S. Powers	Engineering Liason
T. Tate	Security & Emergency Preparedness

NRC

T. Marenchin	Criticality Safety Inspector, Headquarters (HQ)
T. Sippel	Criticality Safety Inspector, HQ
O. López	Senior Fuel Facility Inspector, HQ
M. Sykes	Chief Fuel Facility Branch 3, RGN-II

All attended the exit meeting on February 9, 2012.

4.0 List of Acronyms and Abbreviations

ADAMS	Agency-Wide Document Access and Management System
ADU	ammonium diuranate
AREVA NP	AREVA Nuclear Power, Inc. (current company name)
BLEU	blended low-enriched uranium
DCF	Dry Conversion Facility
ELO	Engineering Laboratory Operations
IP	inspection procedure
IROFS	item relied on for safety
NCS	nuclear criticality safety
NCSA	nuclear criticality safety analysis
NCSS	nuclear criticality safety specification
NRC	Nuclear Regulatory Commission
PM	preventive maintenance
SNM	special nuclear material
SOP	standard operating procedure
U_3O_8	uranium oxide
UF_6	uranium hexafluoride
UNH	uranyl nitrate hexahydrate
UO_2	uranium dioxide